

# PATENT COOPERATION TREATY

## PCT

Rec'd PCT 16 JUL 2004

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 14 MAY 2004



WIPO PCT

Applicant's or agent's file reference 88 TY 1019	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IB 03/00075	International filing date (day/month/year) 15.01.2003	Priority date (day/month/year) 17.01.2002
International Patent Classification (IPC) or both national classification and IPC F16H1/22		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 11 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 10 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  08.08.2003	Date of completion of this report  10.05.2004
Name and mailing address of the International preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  de Beurs, M  Telephone No. +31 70 340-2445  

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International application No. **PCT/IB 03/00075**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-42 as originally filed

**Claims, Numbers**

1-33 filed with telefax on 30.04.2004

**Drawings, Sheets**

1/24-24/24 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

**see separate sheet**

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.  
☒ paid additional fees.  
☐ paid additional fees under protest.  
☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.  
☐ the parts relating to claims Nos. .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	6,8,15-17,19-33
	No: Claims	1-4,7,9-14
Inventive step (IS)	Yes: Claims	15-17,19-21,24
	No: Claims	1-4,6-14,22,23,25-33
Industrial applicability (IA)	Yes: Claims	1-4,6-17,19-33
	No: Claims	

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2. Citations and explanations

**see separate sheet**

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**Re Item I**

**Basis of the report**

The amendments filed with the letter dated 30-4-2004 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following:

- A. In claim 5 is stated that a permanent gap is provided adjacent to the rotating element. In the description of the application as originally filed, e.g. on page 14, lines 22 - 24 is stated that there is a gap between the ring gear and the bearing that supports the ring gear. From this the subject-matter of claim 5 can not be unambiguously derived. Therefore claim 5 introduces subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.
- B. In claim 18 is stated that the pinion gears are equidistantly distributed over an angle of 180 degrees. This subject-matter can not be unambiguously derived from the application as originally filed. Therefore claim 18 introduces subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.

Therefore the claims 5 and 18 have not been examined.

**Re Item IV**

**Lack of unity of invention**

Reference is made to the following document:

D1: EP-A-0 374 463 (BONALUMI LUIGI) 27 June 1990 (1990-06-27)

- 1.a. The subject-matter of dependent claim 8 differs from document D1 by the special technical feature that the fixed element is retained on the fixed portion via an elastic member.

This special technical feature solves the problem of how to retain the fixed element.

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- 1.b. The subject-matter of claim 15 differs from document D1 by the special technical feature that all the pinions are concentrated in an area near the location at which the torque is transmitted from the external member.

This special technical feature solves the problem of how to improve the load distribution over the pinion gears

- 1.c. The subject-matter of dependent claim 22 differs from document D1 by the special technical feature of an oil path that connects axial ends of the pinion pins and an oil sump that is formed in a location corresponding to the axial end of a pinion pin.

This special technical feature solves the problem of how to lubricate the bearings of the pinions.

- 1.d. The subject-matter of dependent claim 33 differs from document D1 by the special technical feature that a first rotating body transfers lubricating oil and a second rotating body retains the lubricating oil transferred by the first body and transfers the oil to a portion requiring lubrication provided at an upper end of the rotating body.

This special technical feature solves the problem of how to pump oil upward.

- 1.e. Thus the following separate inventions or groups of inventions can be distinguished:

Claims 1 - 4, 6 - 14: A planetary gearset whereby one of the sun gear, the ring gear or planet carrier is retained on a fixed portion by an elastic member.

Claims 15 - 17, 19 - 21: A planetary gearset whereby the pinions are concentrated in an area near the location at which the torque is transmitted from the external member.

Claims 22 - 32: A planetary gearset, whereby the bearings of the pinions are lubricated by means of oil paths and an oil sump.

Claim 33: A planetary gearset and two rotating bodies to transfer lubrication oil to a portion at an upper end of the rotating bodies.

- 1.f. Because the contribution over the prior art of these four (groups of) inventions are different and the problems which are solved by these contributions are different, the four (groups of) inventions are not so linked as to form a single general inventive concept (Rule 13.1 PCT). Therefore the requirement for unity of invention referred to in (Rule 13.1 PCT) is not fulfilled.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: EP-A-0 374 463 (BONALUMI LUIGI) 27 June 1990 (1990-06-27)
- D2: FR-A-2 173 486 (DURAND FRANCOIS) 5 October 1973 (1973-10-05)
- D3: US-B1-6 223 616 (SHERIDAN WILLIAM G) 1 May 2001 (2001-05-01)
- D4: GB 681 298 A (JAMES WATT ROSS;TARPEN ENGINEERING COMPANY LTD) 22 October 1952 (1952-10-22)
- D5: US-A-3 771 622 (HYAKUMURA H) 13 November 1973 (1973-11-13)

- 1.a. The document D1 discloses (the references in parentheses applying to this document):

A planetary gearset provided with a sun gear, a ring gear, and a carrier (column 3, lines 16 - 39) that rotatably retains a plurality of pinion gears arranged between the sun gear and the ring gear (column 3, lines 31 - 32) , as elements, in which one of the elements is a fixed element (column 3, lines 31 - 35) and another element is a rotating element (column 3, lines 16 - 24), the planetary gearset transmitting torque between that rotating element and an external member provided eccentric with respect to the rotating element (column 3, line 57 - column 4, line 8), whereby the fixed element is retained so as to be able to move without

rotation (column 3, lines 48 - 56) in a predetermined radial direction of a load from the transmission of torque between the rotating element and the external member (column 3, lines 31 - 38; figure 1), and the load from the transmission of torque between the rotating element and the external member is received by a fixed portion that rotatably retains that rotating element (column 3, lines 16 - 24).

The subject-matter of claim 1 is therefore not novel (Article 33(2) PCT).

- 1.b. The subject-matter of claim 3 is identical to the subject-matter of claim 1. Therefore the subject-matter of claim 3 is also not novel (Article 33(2) PCT).
2. Further the subject-matter of claims 2, 4, 7, 9 - 11 is known from document D1 and is therefore not novel (Article 33(2) PCT).
3. The subject-matter of dependent claim 6 differs from document D1 in that a permanent gap is provided between the rotating element and a bearing therefore.

This feature is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

Thus, the subject-matter of claim 6 does not involve an inventive step and does not satisfy the criterion set forth in Article 33(3) PCT.

4. The subject-matter of dependent claim 8 differs from document D1 in that the fixed element is retained on the fixed portion via an elastic member.

It is however generally known to the person skilled in the art that the toothing on the fixed member in document D1 (part 44 on part 34 in document D1) is an equivalent to the elastic member of for example document D2 (parts 22 and 23 in document D2) and can be interchanged with that feature where circumstances make it desirable.

Thus, the subject-matter of claim 8 does not involve an inventive step and does not satisfy the criterion set forth in Article 33(3) PCT.



- 5.a. The document D1 discloses (the references in parentheses applying to this document):

A planetary gearset in which a plurality of pinion gears are arranged in a circumferential direction between a sun gear and a ring gear (figure 1, part 12) which are on the same rotational axis, with these pinion gears being rotatably mounted to a carrier which is fixed so as not to rotate (column 3, lines 16 - 39), the planetary gearset transmitting torque between the ring gear, and a counter gear which is eccentric with respect to the sun gear and the ring gear (column 3, line 57 - column 4, line 8), whereby the ring gear meshes with the pinion gears on the one hand (column 3, lines 25 - 30) and with its external teeth with the counter gear so that torque is transmitted between the counter gear and the ring gear (column 3, line 57 - column 4, line 2), the pinion gears are arranged away, in the circumferential direction, from a location at which torque is transmitted between the ring gear, and the counter gear (figure 1).

The subject-matter of claim 12 is therefore not novel (Article 33(2) PCT).

- 5.b. The subject-matter of claim 13 is identical to the subject-matter of claim 12. Therefore the subject-matter of claim 13 is also not novel (Article 33(2) PCT).
6. Furthermore the subject-matter of claim 14 is known from document D1 and is therefore not novel (Article 33(2) PCT).
7. Dependent claims 22 and 23 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

The subject-matter of dependent claims 22 and 23 differs from document D1 in that an oil path connects the axial ends of the pinion pins and an oil sump that is formed in a location corresponding to the axial end of a pinion pin.

However, these features have already been employed for the same purpose in a similar planetary gearset, see document D3, Column 5, lines 43 - 50 and figure 1. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a planetary

gearsset according to document D1, thereby arriving at a planetary gearsset according to claim 22 and 23. The subject-matter of claim 22 and 23 does therefore not involve an inventive step (Article 33(3) PCT).

8. Dependent claims 25 - 32 do not seem to contain any additional features which are not obvious to the man skilled in the art (see also paragraph 7).  
The subject-matter of claims 25 - 32 does therefore not involve an inventive step (Article 33(3) PCT).

9. The subject-matter of dependent claim 33 differs from document D1 by the features that a first rotating body transfers lubricating oil and a second rotating body retains the lubricating oil transferred by the first body and transfers the oil to a portion requiring lubrication provided at an upper end of the rotating body.

These features are merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to have lubrication oil pumped to a higher level. See as an example documents D3, D4 and D5.

The subject-matter of claim 33 does therefore not involve an inventive step (Article 33(3) PCT).

10. The document D1 is regarded as being the closest prior art to the subject-matter of claim 15, and shows a planetary gearsset whereby the carrier of the pinion gears is fixed so as not to rotate and an external member which is eccentric to the sun and ring gear.

The problem to be solved by claim 15 may be regarded as improving the load distribution over the pinion gears.

The solution to this problem is that all the pinions are concentrated in an area near the location at which the torque is transmitted from the external member.

This solution is not known from the prior art. Therefore claim 15 and claims 16, 17 and 19 - 21 meet the requirements of Article 33(1) PCT.

11. The combination of the features of dependent claim 24 is neither known from, nor

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rendered obvious by, the available prior art. Therefore claim 24 meets the requirements of Article 33(1) PCT.